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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/936,365	09/13/2001	Reiko Yamada	57454-235	3605

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WASHINGTON, DC 20005-3096

EXAMINER
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JACKSON, JAKIEDA R

ART UNIT	PAPER NUMBER
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2655

DATE MAILED: 06/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 09/936,365	Applicant(s) YAMADA ET AL.	
	Examiner Jakieda R Jackson	Art Unit 2655	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 January 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Amendment***

1. In response to the Office Action mailed August 18, 2004, applicant submitted an amendment filed on January 18, 2005, in which the applicant traversed and requested reconsideration with respect to independent **claims 1, 4, 11, 15 and 22**.

### ***Response to Arguments***

2. Applicant argues Shpiro does not disclose or suggest the use "model phoneme array information" as recited in amended claims 1, 4, 15 and 22. However, Shiprio teaches a reference audio specimen library that stores speech models, which are reference audio specimen for each of a multiplicity of phonemes, words and/or phrases.

Applicant also argues regarding claim 11 that Shpiro do not disclose or suggest evaluating the degree of matching the learner's speech with the model using "a likelihood distribution plane", to evaluate how well the student's speech matches an optimum pronunciation.

However, Shpiro teaches normalized audio waveforms of both the pre-record reference audio specimen and a student's attempted repetition in which a score quantifying the similarity over time between the repetition and reference audio specimen is displayed, to provide feedback to the student (figure 1 with column 5, lines 10-16. The distance between a student's repetition and a set of models are employed. That is the extent to which the student's repetition corresponds to the models (column 5, lines 23-27). Also, the system, for example, compare the student's response specimen with a corresponding plurality of stored reference specimens, thereby to obtain a plurality of

similarity values, and may use the highest of these similarity values, indicating the most similarity, as the score for the student's response (column 7, lines 33-48).

Therefore, Shpiro teaches a likelihood determination means for evaluating degree of matching of each said word speech information with a model speech on a likelihood distribution plane, which as applicant argued on page 12 of the remarks, that it evaluates how well the student speech matches an optimum pronunciation.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 1-22** are rejected under 35 U.S.C. 102(b) as being anticipated by Shpiro et al. (U.S. Patent No. 5,487,671), hereinafter referenced as Shpiro.

Regarding **claims 1, 4, 15 and 22**, Shpiro discloses a foreign language learning device (figure 2, element 210), method, computer-readable medium and computer program (column 1, lines 57-62), hereinafter referenced as a foreign language learning device, comprising:

word separation means (figure 3, element 260) for receiving sentence speech information (phonetic unit), the sentence speech information corresponding to speech produced successively by a learner (student) when the learner utters a sentence

(student's utterance; column 7, lines 5-15) including a plurality of words (multiplicity of words; column 5, lines 36-40), to separate said sentence speech information (phrases; column 5, lines 33-41) into word speech information on the basis of each word included in said sentence (column 7, lines 5-15) using model phoneme array (column 5, lines 33-41);

likelihood determination means (figure 1, element 40 with figure 2, element 280) for evaluating degree of matching (similarity) of each said word speech information with a model speech (figure 1 with column 5, lines 10-16 and column 7, lines 43-48); and

display output means (figure 1, element 30) for displaying, for each said word, a resultant evaluation (figure 1, element 40) determined by said likelihood determination means (figure 1 with column 5, lines 10-27).

Regarding **claims 2, 5, and 16**, Shpiro discloses the foreign language learning device further comprising storage means (figure 2, element 120) for storing a model sentence to be pronounced by said learner (prerecorded speech models) and model phoneme array information which corresponds to said model sentence (multiplicity of phonemes) and concerns the whole of said model sentence (column 5, lines 33-41 with column 8, lines 2-7), wherein

said display output means (figure 1, element 30) presents said model sentence to said learner in advance (figure 5A), and

said word separation means (figure 3, element 270) includes

phoneme recognition means (reference audio for phonemes) for recognizing said sentence speech information (words/phrases) on the basis of each phoneme

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information (column 5, lines 33-41 with column 7, lines 5-15 and column 7, line 65 – column 8, line 7), and

word speech recognition means for recognizing said word speech information (response specimen) for each said word according to said phoneme information (phonetic unit/phoneme) and said model phoneme array information after the separation (column 5, lines 33-41 with column 7, lines 5-15 and column 7, line 65 – column 8, line 7).

Regarding **claims 3, 6 and 17**, Shpiro discloses the foreign language learning device wherein

said phoneme recognition means (figure 1) includes phoneme likelihood determination means (figure 1, element 40 with figure 3, element 280) for determining likelihood of each phoneme information (most similarity) in said sentence speech information (student's response), with respect to each of phonemes that can be included in said foreign language (British/American dialect; column 7, line 34 – column 8, line 14), and

said likelihood determination means (figure 3, element 280) evaluates the degree of matching of each said word speech information (evaluating the student responses; column 7, lines 33-41) by comparing, on a likelihood distribution plane of phoneme information (figure 1 with column 5, lines 10-16 and lines 23-27 with column 7, lines 33-48) in said sentence speech information (figure 2, element 520 with column 9, lines 2-3), each word likelihood determined along a path followed when pronunciation follows a phoneme array exactly the same as said model phoneme array information (column

5, lines 33-41 and lines 57-65 with column 8, lines 6-14) with the sum of word likelihoods (figure 5B, element 530) determined along mistakenly utterable candidate paths from a speech waveform of pronunciation by the learner (graphic representations of the waveforms; figures 6-11).

Regarding **claims 7 and 18**, Shpiro discloses the foreign language learning device further comprising the step of evaluating a resultant pronunciation by said learner after practice of the pronunciation (audio specimen to be practiced; column 8, lines 40-45), said evaluation (evaluating) made on the basis of each said phoneme and said word in said model sentence uttered (student's responses) by said learner (column 7, lines 34-48).

Regarding **claims 8, 12 and 19**, Shpiro discloses the foreign language learning method wherein

said step of evaluating a resultant pronunciation after practice thereof includes the step of displaying a vocal tract shape model (graphic representation of the waveform) for each said phoneme via a display unit to said learner (figure 1, element 30 with figures 6-11).

Regarding **claims 9, 13 and 20**, Shpiro discloses the foreign language learning device wherein

said step of evaluating a resultant pronunciation after practice thereof includes the step of displaying, via a display unit (figure 1, element 30) to said learner, a model voice print (figure 1, element 32) and a voice print concerning pronunciation by said

learner (figure 1, element 34), said voice prints being compared with each other to be displayed (figure 1 with column 5, lines 10-16 and column 9, lines 24-35).

Regarding **claims 10, 14 and 21**, Shpiro discloses the foreign language learning method wherein

said step of evaluating a resultant pronunciation after practice (figure 1, element 40) thereof includes the step of displaying, via a display unit (figure 1, element 30) to said learner, position of pronunciation by said learner on a formant plane (figure 1 with column 5, lines 61-65 and column 8, lines 2-7).

Regarding **claim 11**, Shpiro discloses a foreign language learning device comprising:

storage means (figure 2, element 120) for storing a model sentence to be pronounced by a learner (prerecorded speech models) and model phoneme array information corresponding to said model sentence (multiplicity of phonemes; column 5, lines 33-41 with column 8, lines 2-7);

display output means (figure 1, element 30) for presenting said model sentence to said learner in advance (figure 5A);

word separation means (figure 3, element 260) for receiving sentence speech information (phonetic unit) corresponding to a sentence pronounced by said learner (student; column 7, lines 5-15) to separate the sentence speech information (phrases; column 5, lines 33-41) into word speech information on the basis of each word included in said sentence (column 7, lines 5-15);

likelihood determination means (figure 1, element 40 with figure 2, element 280) for evaluating degree of matching (similarity) of each said word speech information with a model speech (figure 1 with column 5, lines 10-16 and column 7, lines 43-48) on a likelihood distribution plane (column 5, lines 10-16 and lines 23-27 with lines 33-48); and

display output means (figure 1, element 30) for displaying, for each phoneme and each said word, a resultant evaluation (figure 1, element 40) by said likelihood determination means (figure 1 with column 5, lines 10-27),

said word separation means (figure 3, element 270) including

phoneme recognition means (reference audio for phonemes) for recognizing said sentence speech information (word/ phrases) on the basis of each phoneme information (column 5, lines 33-41 with column 7, lines 5-15 and column 7, line 65 – column 8, line 7), and

word speech recognition means for recognizing said word speech information (response specimen) for each said word according to said phoneme information (phonetic unit/phoneme) and said model phoneme array information after the separation (column 7, lines 5-15 and column 7, line 65 – column 8, line 7), and

said foreign language learning device further comprising pronunciation evaluation means for evaluating a resultant pronunciation after practice of the pronunciation (audio specimen to be practices; column 8, lines 40-45) for each said phoneme and for each said word in said model sentence uttered (student's responses) by said learner in a pronunciation practice period (column 7, lines 34-48).

***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Kojima (U.S Publication No. 2004/0215445) discloses a pronunciation evaluation system.
- Shi (USPN 6,438,524) discloses a method and apparatus for a voice controlled foreign language translation device.
- Minematsu (USPN 6,249,763) discloses a speech recognition apparatus and method.
- Shannon (USPN 6,224,383) discloses a method and system for computer assisted natural language instruction with distracters.
- D'hoore et al. (USPN 6,085,160) disclose language independent speech recognition.

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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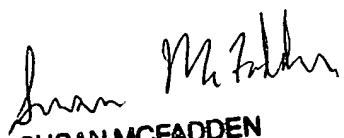
the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jakieda R Jackson whose telephone number is 571.272.7619. The examiner can normally be reached on Monday through Friday from 7:30 a.m. to 5:00p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on 571.272.7582. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JRJ  
June 9, 2005

  
**SUSAN MCFADDEN**  
**PRIMARY EXAMINER**